

THE SCHWINGER LIMIT OF THE PAIR PRODUCTION PROCESS*

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Abstract

We investigate the pair-production process in vacuum induced by a supercritical field. We focus on the transition from the early time regime that is determined by the temporal turn-on of the field to the steady state regime characterized by a linear growth of the pair production probability in time. We compare numerical data obtained from the temporally and spatially resolved quantum field theory with analytical estimates. We test the range of validity of the Schwinger formula for supercritical fields with a finite spatial extension and strength.

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